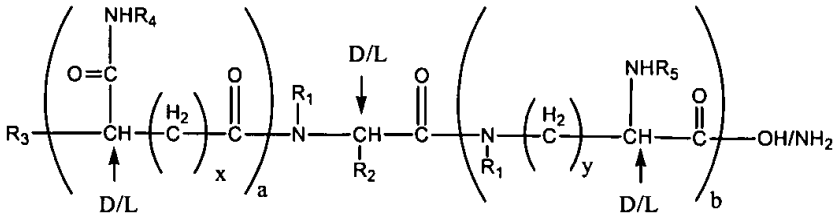
AMENDMENTS TO THE CLAIMS

1. (Previously Presented) An isopeptide represented by the general formula (I):



where, if a is 1 then b is 0;

if a is 0 then b is 1;

x and y independently are 1-7;

R_1 is H or CH_3;

R_2 is the side chain of an amino acid selected from the group alanine, arginine, asparagine, aspartic acid, cysteine, glutamic acid, glutamine, glycine, histidine, isoleucine, leucine, lysine, methionine, phenylalanine, proline, serine, threonine, tryptophan, tyrosine, and valine;

R_3 is selected from the group consisting of: H, NH_2, NHR, NR_2, $^{+}NR_3$, OH, SH, RO, RS, RSO, RSO_2, COR, CSR, COOH, COOR, $CONH_2$, CONHR, $CONR_2$, OCOR, and SCOR, wherein R = alkyl, alkenyl, aryl, aralkyl, or cycloalkyl; and

R_4 and R_5 are independently a hydrophobic group.

2. (Previously Presented) The isopeptide according to claim 1, wherein R_1 is H.

3. (Currently Amended) The isopeptide according to claim 1 ~~or claim 2~~, wherein R_2 is the side chain of an amino acid selected from the group consisting of glycine and alanine.

4. (Currently Amended) The isopeptide according to ~~any one of claims~~ claim 1 ~~to~~ ~~3~~, wherein R_3 is H or NH_2.

5. (Currently Amended) The isopeptide according to ~~any one of claims 1-4~~ claim 1, wherein R_4 and R_5 independently comprise an aromatic carbon ring.

6. (Previously Presented) The isopeptide according to claim 5, wherein the aromatic ring comprises a 6- or 12 membered ring or a substituted form thereof.

7. (Previously Presented) The isopeptide according to claim 6, wherein the ring is substituted with at least one of: a lower alkyl, alkoxy, hydroxyl, carboxy, amine, thiol, hydrazide, amide, halide, hydroxyl, ether, amine, nitrile, imine, nitro, sulfide, sulfoxide, sulfone, thiol, aldehyde, keto, carboxy, ester, an amide group; a seleno group, a thio group and derivatives thereof.

8. (Previously Presented) The isopeptide according to claim 6, wherein the aromatic ring is substituted with at least one of: a lower alkyl, alkoxy, halide, nitrile and nitro group.

9. (Previously Presented) The isopeptide according to claim 6, wherein the ring is substituted with at least one of: an alkoxy and nitro group.

10. (Previously Presented) The isopeptide according to claim 6, wherein the ring comprises about 1 to 5 substitutions.

11. (Previously Presented) The isopeptide according to claim 6, wherein the ring comprises about 1 to 2 substitutions.

12-67. (Cancelled).

68. (New) The isopeptide according to claim 6, wherein the 6-membered aromatic carbon ring comprises a substituent at the 4-position.

69. (New) The isopeptide according to claim 68, wherein the substituent is selected from the group consisting of a methyl, ethyl, t-butyl, c-hexyl, phenyl, n-butyl, n-hexyl, n-octyl, ethoxy, t-butoxy, phenoxy, butoxy, benzyloxy, n-hexyloxy, and n-octyloxy group.

70. (New) The isopeptide according to claim 5, wherein the aromatic carbon ring is selected from the group consisting of a benzyl, phenyl, and napthyl group.

71. (New) The isopeptide according to claim 70, wherein the aromatic carbon ring is a benzyl group.

72. (New) The isopeptide according to claim 1, wherein R_1 is H; R_2 is the side chain of the amino acid glycine or alanine; R_3 is H or NH_2; and R_4 and R_5 comprise a benzyl group substituted with at least one of a nitro or methoxy group.

73. (New) The isopeptide according to claim 1, wherein the isopeptide comprises a free N-terminal, a free C-terminal, or both a free N- and C-terminal.

74. (New) The isopeptide according to claim 1, wherein the isopeptide has a property selected from the group consisting of binding to an hPepT1 transporter or a biologically active fragment thereof; having a half-life in an *in vitro* plasma stability assay of more than about 30 minutes; having a half-life in an *in vitro* plasma stability assay of more than about 48 hours; binding to a tissue, cell, or cell fraction that is a site of action

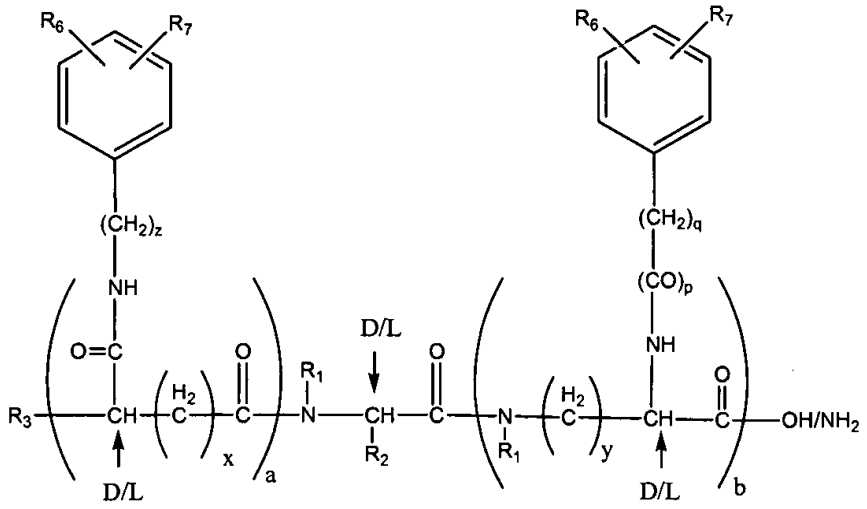
for an antiarrhythmic peptide; modulating the function of the tissue, cell, or cell fraction; antagonizing the function of the antiarrhythmic peptide; agonizing the function of the antiarrhythmic peptide; modulating a receptor of the antiarrhythmic peptide; and increasing the time to an AV block in a standard calcium-induced arrhythmia assay.

75. (New) The isopeptide according to claim 1, wherein the isopeptide is selected from the group consisting of the isopeptides shown in Table 1 and Table 2.

76. (New) A pharmaceutical composition comprising an isopeptide of claim 1 and a pharmaceutical carrier.

77. (New) The pharmaceutical composition according to claim 76, wherein the composition is parenterally administrable or is orally administrable.

78. (New) An isopeptide represented by the general formula II:



where, if a is 1 then b is 0;

if a is 0 then b is 1;

x and y independently are 1-7;

z is 1-6;

q is 0-6;

p is 0-1;

R_1 is H or CH_3;

R_2 is the side chain of an amino acid selected from the group consisting of alanine, arginine, asparagine, aspartic acid, cysteine, glutamic acid, glutamine, glycine, histidine, isoleucine, leucine, lysine, methionine, phenylalanine, proline, serine, threonine, tryptophan, tyrosine, and valine;

R_3 is selected from the group consisting of: H, NH_2, NHR, NR_2, $^+NR_3$, OH, SH, RO, RS, RSO, RSO_2, COR, CSR, COOH, COOR, $CONH_2$, CONHR, $CONR_2$, OCOR, and SCOR, wherein R = alkyl, alkenyl, aryl, aralkyl, or cycloalkyl; and

R_6 and R_7 are independently selected from the group consisting of H, alkyl, alkenyl, aryl, aralkyl, halogen, CN, NO_2, alkoxy, aryloxy, aralkyloxy, thioalkoxy, thioaryloxy, thioaralkyloxy, $+S(CH_3)_2$, SO_3H, SO_2R, NH_2, NHR, NR_2, $^+NR_3$, OH, SH, COOH, COOR, $CONH_2$, CONHR, $CONR_2$, CH_2OH,. NCO, NCOR, NHOH, $NHNH_2$, NHNRH, CH_2OCOR, CH_2OCSR, COR, CSR, CSOR, CF_3, and CCl_3, wherein R is alkyl, alkenyl, aryl, aralkyl, or cycloalkyl.

79. (New) The isopeptide according to claim 78, wherein R_1 is H.

80. (New) The isopeptide according to claim 78, wherein R_2 is the side chain of an amino acid selected from the group consisting of glycine and alanine.

81. (New) The isopeptide according to claim 78, wherein R_3 is H or NH_2.

82. (New) The isopeptide according to claim 78, wherein R_6 and R_7 are independently selected from the group consisting of H, alkyl, halogen, CN, NO_2, alkoxy and CF_3.

83. (New) The isopeptide according to claim 82, wherein R_6 and R_7 are independently selected from the group consisting of H, NO_2, and alkoxy.

84. (New) The isopeptide according to claim 78, wherein R_1 is H; R_2 is the side chain of the amino acid glycine or alanine; R_3 is H or NH_2; R_6 and R_7 are independently selected from the group consisting of H, NO_2, and methoxy.

85. (New) A method for modulating gap junctional communication in a population of cells comprising administering an effective amount of an isopeptide of claim 1 to the population of cells, thereby modulating gap junctional communication between the cells.

86. (New) A method of preventing and/or treating a pathological condition involving impaired gap junctional communication comprising administering to an individual in need thereof a therapeutically effective amount of an isopeptide of claim 1.

87. (New) The method according to claim 86, wherein administration is parenteral or oral.

88. (New) The method according to claim 86, wherein the pathological condition is selected from the group consisting of a cardiovascular disease; inflammation of airway epithelium; a disorder of alveolar tissue; bladder incontinence; impaired hearing; an endothelial lesion; diabetic retinopathy; diabetic neuropathy; a central nervous system

disorder; ischemia of the central nervous system, spinal cord, brain, or brain stem; a dental tissue disorder; kidney disease; failure of bone marrow transplantation; wound; erectile dysfunction; neuropathic pain; subchronic inflammation; chronic inflammation; cancer; transplantation failure; and a condition caused by an excess of reactive oxygen species, free radicals, or nitric oxide.